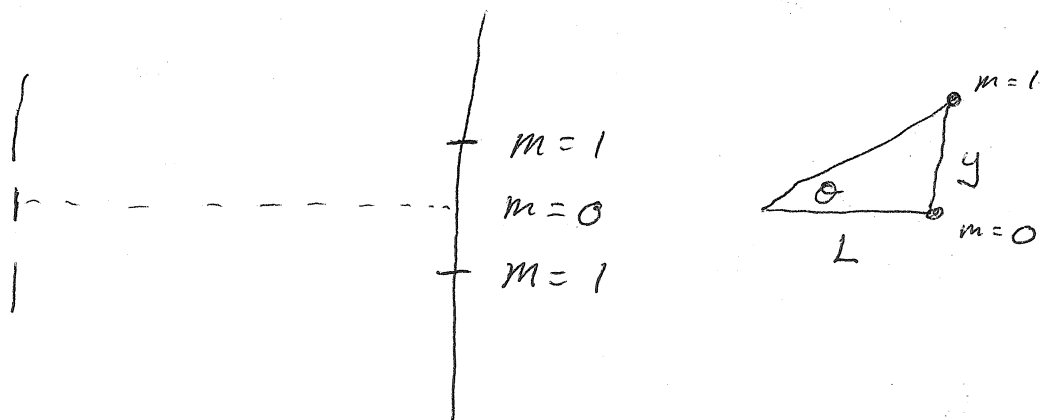


A parallel beam of light from a HeNe laser with wavelength 656 nm falls on two very narrow slits 0.060 mm apart. How far apart are the fringes in the center of the pattern if the screen is 3.6 m away?



$$d \sin \theta = m \lambda$$

$$\theta = \sin^{-1} \left(\frac{m \lambda}{d} \right) \quad m=1$$

$$\theta = \sin^{-1} \left(\frac{656 \times 10^{-9} \text{ m}}{0.060 \times 10^{-3} \text{ m}} \right) \quad \begin{array}{l} d = 0.060 \text{ mm} \\ \lambda = 656 \text{ nm} \end{array}$$

$$\tan \theta = \frac{y}{L}$$

$$y = L \tan \theta = 3.6 \text{ m} \tan \left(\quad \right) = \boxed{3.94 \times 10^{-2} \text{ m}}$$